

REMARKS

Based upon the Notice of "Amendments in a Revised Format Now Permitted" published by the USPTO on January 31, 2003 waiving the provisions of 37 CFR § 1.121(a), (b), (c) and (d), the present Amendment is submitted as being compliance therewith.

This Amendment is being filed in response to the Office Action mailed March 12, 2003. Claims 1-28 are pending. Claims 1-14 have been amended and claims 15-28, including independent claims 15, 19, 23 and 26, have been canceled in the present Amendment. Claims 29-33, including independent claim 29, have been added. No additional claim fee is believed to be necessary for added claims 29-33. However, authorization is granted to charge our deposit account no. 18-1644 for any fees, if necessary, for entry of this Amendment.

The Examiner has acknowledged applicant's claim for foreign priority based on application No. Hei 10-12967, filed in Japan on April 24, 1998, and noted that a certified copy of such application has not yet been filed. A letter enclosing the priority document is being mailed by mail certification concurrently with the filing of this Amendment. Entry of the claim for priority is accordingly requested upon receipt of such document.

The Examiner has objected to the title as not descriptive. Applicant has accordingly amended the title to more clearly indicate the invention to which the claims are directed.

In the Office Action, claims 1-8 and 15-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sasaki et al. (U.S. Patent No. 5,581,298) in view of Suzuki (U.S. Patent No. 5,568,195). Claims 9-11 and 23-25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Sasaki et al. reference in view of Arai et al. (U.S. Patent No. 5,115,319)

in further view of the Suzuki reference. Claims 12-14 and 26-28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Sasaki et al. reference in view of Arai et al.

Claims 1-14 have been amended to clarify the structure of the signal processing apparatus of the invention and the rejections thereto are respectfully traversed.

With respect to amended claims 1-8, the feature of amended independent claim 1 of the present invention is that a suppression circuit is provided in front of a color-difference signal forming circuit, and suppresses the plurality of color signals generated by the interpolation circuit if a level of a luminance signal is not lower than a first predetermined level and/or is lower than a second predetermined level in order to input the plurality of suppressed color signals, which have been outputted from said suppression circuit, into said color-difference signal forming circuit. Similarly, the feature of independent claim 5, as amended, is that the suppression circuit is provided in front of said color-difference forming circuit and suppresses the RGB signals generated by said RGB matrix circuit in order to input the suppressed RGB signals into said color-difference forming circuit. Such a structure is neither taught nor suggested by the cited references or by a combination thereof.

Sasaki et al. teach the use of a signal processing apparatus for interpolating complementary color signals obtained from a pickup element by interpolation filters 25-28, converting the interpolated complementary color signals into primary colors by RGB conversion 60 having white balance, and for converting them into a luminance signal Y and then color-difference signal R-Y, B-Y by color-difference matrix 63. However, as noted by the Examiner, Sasaki et al. do not teach a suppression circuit for suppressing color signals.

Suzuki teaches white balance control for performing clipping at a high level and a low level, in accordance with the luminance of external light, color temperature and the presence of flicker detection, of color-difference signals Y, R-Y, B-Y which have been converted by color-difference matrix from color signals R, G and B derived in process circuit 11 shown in Fig. 2, integrating the three signals outputted from the clip circuit 13, performing A/D conversion on the integrated signals, and controlling the gain of amplifiers 7 and 9 of R and B based on control values obtained by processing the A/D converted signals in the MPU to have a white balance.

In a combination of the Sasaki et al. and Suzuki references, white balance 61 in Sasaki et al. corresponds to R amplifier 7 and B amplifier 9 in Suzuki. When the R, G and B color signals are input to process circuit 11, color-difference signals Y, R-Y and B-Y which have been converted by color-difference matrix from the R, G and B color signals, are clipped. The R, G and B signals obtained from the clipped signals are then inputted into MPU 19 to control the gain of amplifiers 7 and 9 so as to control white balance (Suzuki col. 3, lines 52-61; col. 5, lines 15-27).

The combination of the Sasaki et al. and Suzuki references would thus have the suppression circuit (elements 13, 15 and 17 in the Suzuki patent) after the color processing or color difference circuit (11 in Suzuki and 63 in Sasaki et al.) and the output of the suppression circuit being used to develop signals (MPU 19 in Suzuki) for inputting to a white balance circuit (61 in Sasaki et al. and 7 and 9 in Suzuki). The resultant combination would thus not teach or suggest placing a suppression circuit in front of a color-difference signal forming

circuit in order to input the plurality of suppressed color signals into said color-difference signal forming circuit. Applicant's amended claims 1 and 5, both of which recites such features, thus patentably distinguish over the combination of the Sasaki et al. and Suzuki references.

With respect to independent claim 9, as amended, the Examiner, relying on the Arai et al. patent, states that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a clipper or suppression circuit before the color conversion circuit (60) of Sasaki et al. in order to prevent the high and low luminance values from being included in a white balance calculation to achieve a better white balance as taught by Suzuki."

However, the Arai et al. patent only teaches supplying a signal whose high level of luminance signal and low level of luminance signal are clipped in a clip circuit to CPU 6, and determining a combination of aperture and shutter speed based on subject brightness value calculated in CPU 6 (Arai et al., Col. 4, lines 23-33). Arai et al. thus deal with luminance signals and do not deal with processing of color signals as in Sasaki et al. nor controlling of white balance of color signals by suppressing color difference signals as taught in Suzuki. The Arai et al. teachings would thus not motivate a skilled artisan to modify the Sasaki et al. and Suzuki patents and, thus, the teachings of the three patents would not result in the signal processing apparatus of amended claim 9, in which a suppressing circuit is provided in front of an RGB matrix circuit, and color signals outputted from the suppression circuit are inputted into the RGB matrix circuit.

Further, with respect to independent claim 12, again Arai et al. only discloses supplying clipped luminance signals into CPU 6 and determining a combination of aperture and

shutter speed based on calculated subject brightness value. There is no teaching in the Arai et al. patent of processing color signals as in the Sasaki et al. patent. Accordingly, there is nothing in the teachings of the patents to motivate a skilled artisan to modify the Sasaki et al. patent based on the Arai et al. patent. Amended claim 12 in reciting a suppression circuit provided between an image pickup element and an interpolation circuit and a color-difference signal forming circuit for forming color-difference signals using color signals suppressed by said suppression circuit thus patentably distinguishes over the combination of the Sasaki et al. and Arai et al. patents.

Claims 1, 5, 9 and 12 are therefore submitted as patentable based on the cited references not disclosing or suggesting the claimed signal processing apparatus within the meaning of Section 103. Claims 2-4, 6-8, 10-11 and 13-14 depend from independent claims 1, 5, 9 and 12, respectively, and are therefore submitted as patentable for at least the same reasons.

Based upon the cancellation of claims 15-28 in the present Amendment, the rejections thereto are submitted as being moot.

Newly added independent claim 29 is directed to a signal processing apparatus which processes a signal outputted from an image pickup element having filters arranged to use plural kinds of colors, comprising a color-suppression circuit for color-suppressing primary color signals or complementary color signals obtained from the image pickup element in accordance with the level of luminance signal, and an image pickup device comprising a color signal processing circuit for processing the output by the suppression circuit. Applicant submits that such an apparatus is neither taught nor suggested by the cited references or by any combination

thereof for similar reasons as recited above with respect to the amended claims. Accordingly, newly added independent claim 29 is submitted as patentable.

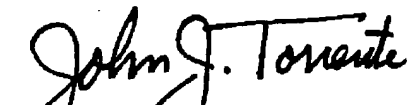
Based upon the patentability of independent claim 29, the newly added dependent claims 30-33 are also submitted as being patentable since they differ in scope from the parent independent claims.

If the Examiner believes that an interview would expedite consideration of this Amendment or of the application, a request is made that the Examiner telephone applicant's counsel at (212) 682-9640.

Dated: June 12, 2003

Respectfully submitted,

ROBIN, BLECKER & DALEY
330 Madison Avenue
New York, New York 10017
T (212) 682-9640


John J. Torrente
Reg. No. 26,359
Attorney of Record